HANDBOOK FOR TEACHING ASSISTANTS IN MATHEMATICS

1982-83

University of California, Santa Barbara

TABLE OF CONTENTS

PART I

Mechanics of the Department

	Page
Teaching Assistant Duties	1
Registration Week Duties	3
Employment Forms and Pay	3
Offices and Keys	4
Supplies	4
Textbooks and Equipment	4
Typing Services	5
Photocopying	5
Dittos	6
Communication/Common Room	7
Scheduling Office Hours	8
After Scheduling Office Hours	10
Tutorial Services and Counseling for Your Students	10

PART II

On the Teaching of Mathematics

The Responsibility of a Teacher	11
Preparation for Math Lab	14
Preparation for a Section	14
First Day in Section	15
Student-Teacher Rapport	17
Conducting the Section (6 behaviors)	18
Use of Chalkboard	23
Speaking Techniques	24
Devising Tests	26
Cheating	27
Grading	28
Teaching Fellow	29
Instructional Development	30

PART I

TA Duties

Your TA duties each quarter will normally consist of preparing for and meeting discussion sections and holding office hours, or working in the Math Lab, or a combination of both. Also, you will be assigned tasks to perform during registration week. Full time section duty is normally six sections and three office hours per week, and full time Math Lab duty is sixteen hours per week.

If you have Math Lab duty, your responsibilities consist of making sure you are scheduled for the appropriate number of hours per week (see Ibrahim Sadek concerning this) and of being available to answer questions and grade exams during all hours for which you are scheduled.

If you have section duty, you will have several responsibilities in addition to those of preparing for and meeting the sections and holding office hours. You will ordinarily be expected to share equally with the professor and any other TA's for the course the proctoring and the grading of all exams. (Be aware that this can make for a hectic finals week. Plan ahead.) You may be requested to give review sessions before examinations. Under some circumstances, such as TAing for a course with which you are not familiar, you may be asked to attend some or all of the course lectures. The professor

for which you are TAing might want you to, either as a learning experience or as an assistance to him/her, present one or more lectures. Finally, depending on the course, there are many and varied other tasks for which you will be responsible.

Sound complicated and like a lot of work? It can be, and it is necessary that you be organized and plan ahead. Toward this end, it is extremely important that you talk to the professor(s) for whom you will be TAing well before the quarter begins, and find out exactly what he/she expects of you. Further, it is expected that you will have weekly contact with the instructor throughout the quarter.

Since you will also be expected to maintain a high level of achievement in your own classroom work, there are limits to what should be asked of you. For instance, you will not normally be expected to prepare exams, nor bear the entire brunt of grading them. You will not repeatedly have to give class lectures. With this in mind, if you begin to feel that your TA duties are keeping you from performing to the best of your abilities with respect to either your TA duties or your classroom work, see the TA Training Sessions Supervisor, Dr. Larry Gerstein or the Teaching Fellow. They will be happy to try to help you resolve any problems.

Registration Week Duties

You will perform these duties during registration week and/or the first week of instruction. Therefore, it is mandatory that you are available during this period. Typical duties are: proctoring and/or grading algebra diagnostic exams, holding algebra review sessions, or helping with open registration. These tasks normally require 4-8 hours of your time. You will be notified of the exact nature of your extra duties by mail. During the fall quarter registration week there will be a mandatory meeting for all TA's. Also during this week there will be a TA workshop which is required for all new TA's (experienced TA's are welcome).

Employment Forms And Pay

Jodi Byron-Cooper (SH 6601) is responsible for employment form processing. Please be sure to see her to sign the necessary paper work before the beginning of the quarter. IN ADDITION, any time you have a change of address or home phone number, please inform Jodi. Failure to do so results in your W-2 form (Tax Form) not reaching you.

Your paycheck will be received on the 1st of the month for the previous month worked. (Fall Quarter appointments will receive first check on November 1.) You have the option to have your

check, (1) mailed to the department; (2) mailed to your home; or (3) deposited directly into you bank account. For more information, contact Jodi Byron-Cooper.

Office and Keys

At the beginning of each academic year you will be given office space which will normally be shared with one other person. The main office (SH 6607) will issue you your office key and a key to the South Hall Building. Should you resign from the University (or from your TAship), you are responsible for returning your keys. Failure to do so could result in a hold up of your pay check.

Supplies

Only office supplies directly applicable to your teaching responsibilities will be provided by the Department. Classroom supplies are available in the Typing Office (SH 6617). You must provide all other office supplies except "homemade" scratch tablets which are freely available to all from the Typing Office.

Textbooks and Equipment

You need not purchase the text for the course you will be teaching. A copy of each necessary text may be checked out from

the main office at the beginning of the quarter. These texts should be returned, in good condition, at the conclusion of each quarter. For certain classes, calculators may also be checked out. In addition, the department has available for use in your office a few manual type-writers. If you are interested in having one assigned to your office, please see Joy Williams in SH 6603.

Typing Services

The "official classroom use" rule applies to secretarial services as well. The typists in the typing office (SH 6617) will type midterms and finals, but not quizzes, papers, or dissertations. Occasionally, you will be asked to write a letter of recommendation; the typing office will also type them. In any case, be sure to allow a minimum of 48 hours for the typists to complete your typing requests. Finals and midterms should be submitted to the typists, at least 1 (one) week in advance. NO LAST MINUTE TYPING JOBS WILL BE DONE BY THE TYPISTS.

Photocopying

A copy machine is located in the equipment room (SH 6623). It is not to be used for large quantities of copies: the ditto machine should be used for this purpose. Occasionally you may need to make only one or two copies of something pertaining to

your teaching. In this case, with the permission of the course instructor, you may make the necessary copies and charge them to the appropriate course.

As a graduate student who has not yet advanced to candidacy, you do not have access to the copy machine for your personal use. After you do advance to candidacy, you may use up to 500 copies for your research. But until then, you must be satisfied with paying 5¢ per copy at the copy machines located in the main Library (second floor), Arts Library, or the University Center. If you have a large number of copies to make, you might consider taking them to either the Alternative, or Kinko's copy centers in I.V. These shops normally charge 3.5¢-4.5¢ per copy.

Dittos

Various duplicating machines are located at the back of the Mail Room (SH 6623). You will find a ditto machine there which you may use to copy quizzes, homework answers, or any other material appropriate to your teaching responsibilities.

One way to make dittos is to use ditto masters. A box of them may be found in the mail room. Helpful hints: be sure to remove the ditto master insert (tissue) before writing on it, and leave at least two centimeters border on all sides. If you want to make dittos of material which you do not want to recopy on a

ditto master, there is an alternate method. First, make one photo copy of the material. (Charge the copy to the appropriate course in the notebook on the copy machine.) Use this copy and the thermofax machine to make your ditto master.

If you have any trouble operating any of these machines, see Sonia in the typing office. She will provide the necessary instruction.

Communication/ Common Room

You will have a mailbox in the Mail Room (SH 6623). Your box will be used for intracampus mail; such as communication between yourself and course instructors, colloquia announcements, etc. This box is not to be used for personal mail. In the main department office, you will find other boxes (listed by the name of the course instructor) which are used strictly for communication with course readers. If you need to leave a note for a faculty member, it should be placed in his/her Mail Room mail box (SH 6623). You should note that the Mail Room is open from 8:00 a.m. to 5:00 p.m. Monday through Friday. Keys to this room are not normally issued to graduate students, so important messages which you cannot claim during the regular hours should be slipped under your office door.

In addition to the mailboxes, the Mail Room has other amenities. One such is a telephone (you will not have a telephone in your office). For off-campus calls dial 9, then the local number as usual. For on-campus calls i.e., to an office or another department, simply dial the four digit extension. Long distance calls cannot be made on this phone. If you need to use a phone after the lounge has been locked, there is a free one available on the first floor of the Graduate Tower. Dialing instructions for this phone are the same as those stated above. If it is necessary for someone to reach you by phone during the day, a message may be left at 961-2171, and it will be put in your box.

The Common Room (SH 6631) is available for your use as a lounge and meeting place. We hope that this will become a gathering place for faculty and graduate students alike in which a lot of useful scholarly interaction takes place.

Scheduling Office Hours

As a full-time teaching assistant, you are required to hold three office hours per week unless you have full-time duties in the Math Lab (1S, 2S, 3S, 5S, 34S, P/Stat 33S). Then you need not hold any. If you have both section and lab duties, then you should schedule proportionally fewer office hours.

Although the hours you schedule are your choice, you may find the following suggestions helpful. Schedule them on different days and times. For example, instead of MWF 1:00-2:00, schedule TU 9:00-10:00, W 1:00-2:00, F 3:00-4:00. This will minimize the number of office hours you will need to hold by appointment. You and your office mate will be studying a lot in your office, so whenever possible, schedule your office hours when your office mate won't be around. Also, it can be complete chaos if you both schedule them for the same time. Since you will want to attend various seminars and colloquia which are normally scheduled for 4:00, you should not schedule your office hours for these times either. One final observation: Students will occasionally have a tendency to stay well beyond your posted office hour. You will, however, have too much of your own work to spend all day helping them. To alleviate this problem, some TAs schedule each office hour one hour before they must leave for class. Also, you may politely ask them to leave and come back during your next office hour.

It is generally unwise to have an "open door" policy in your office, whereby students feel free to come in to see you whenever they wish. The students tend to prepare less for such sessions, since time constraints do not force efficiency upon them, and you will be left with little or no time to pursue your own work. The resulting anxiety can have a negative effect on your teaching as well as your studies.

After Scheduling Office Hours

After you have scheduled your office hours (and you actually will find times!) you will need to report them to the department office. They will give you a door card with your schedule to be posted outside your office door. You should announce your office hours in your first few meetings with each section. Once you announce the hours, be sure to keep them. If you cannotfor some reason, call the main office (961-2171) so that someone can post a cancellation message outside your door. Be sure the instructor knows your office hours as soon as possible. Also, it is your responsibility to encourage the students to take advantage of your office hours. Remember, those three hours per week are their time, not yours!

Tutorial Services and Counseling for your Students

Occasionally students will seek information from you about personal counseling services. For remedial courses in reading and arithmetic and workshops on topics such as note-taking, test-taking and study methods, you can refer them to the Academic Skills Center (Bldg. 477). The Center offers tutorial services only to students with particular finanical need (e.g. EOP students).

Tutorial services available to all students may be found at the Placement Center (Bldg. 427) where a list of private tutors is on file. It is the responsibility of the student to negotiate suitable payment with the chosen tutor for services rendered. Also, if a student is a service veteran with a "C" average or lower, they should be referred to the Office of Veterans Affairs (Bldg. 446), where students may seek help in receiving federal money to pay a tutor obtained through the Placement Center.

Students in need of personal and/or career counseling should be sent to the Counseling Center (Bldg. 478). The staff there is capable of handling students with minor or serious adjustment problems. Do not assume the responsibility of dealing with the psychological problems of your students. If a student appears to have a persistent problem and will not seek counsel elsewhere, be sure to discuss the situation with Dr. Gerstein. Undergraduate students needing academic advising should be referred to Princess Mathews in the Mathematics office.

PART II

The Responsibility of a Teacher

As teachers of mathematics, we assume a great responsibility. We may significantly alter the mathematical attitudes and/or competence of our students, in either a positive or negative manner.

Since we will be dealing with students in many fields, our teaching attitudes and abilities are a serious matter. Future engineers, biologists, economists, physicists, chemists and others (in particular, mathematicians) need to understand and apply mathematics to their disciplines. This involves much more than simply solving standard problems with standard techniques. It means they must learn to think mathematically. For example, a biologist needs to know that derivatives are rates of change, not just how to compute them.

Thus, it is important that we teach as well as we possibly can. This calls for a deeper understanding of the subject matter than simply being able to correctly solve problems and teach students a similar skill. It calls for an understanding of the nature of students' difficulties, actual and potential, and the ability to encourage students to express their difficulties without shyness or fear of ridicule. We must, in addition, find creative ways to increase the students' understanding. Simple repetition, for example, is unlikely to be effective. We must find alternative questions and explanations which lead the students to greater insight.

At this point, one might feel that the responsibility of being both a TA and a graduate student is too great. But the effort directed toward effective teaching has many rewards. First of all,

it becomes easier with time. By consciously employing effective techniques in our teaching, they eventually become part of our natural repertoire. This is not to say that our teaching capabilities reach a maximum level, for there is always room for improvement. It simply means that the effort required to teach effectively is diminished, while the enjoyment we receive by teaching well is increased. This enjoyment comes in many forms: respect, grateful evaluations from students, the experience of working with other people, and the pride in knowing that one has contributed to the enlightenment of certain individuals. Besides, the necessity to give an exposition of a particular topic leads to a substantial clarification of our own ideas.

We must not feel that the teaching we do is merely a formality whereby we become entitled to a subsistence wage, and that the only important activity for us is research. This view contributes to a poor attitude, and our teaching suffers as a result. As TA's, we must realize that our years as a graduate student are a period of apprenticeship in a craft, and that this craft comprises both research and teaching. Even those TAs going into industrial or government work can expect to spend a fair amount of time teaching their colleagues as well as learning from them. Clear explanations of your work are necessary for any complex project.

Preparation For Math Lab

Some of you will be assigned to work in the Math Lab (Phelps 1530) as your TA responsibility. This is where the various self-paced math courses are taught: 1S (College Algebra), 2S (Trigonometry), 3S (Calculus), 5S (Advanced Calculus with Applications), 34S (Calculus For Life Sciences), and P/Stat 33S (Statistics). The Lab is open every weekday from 10:00-12:00, 1:00-5:00, and from 7:00-9:00 p.m. Monday through Thursday nights. If you are a full-time TA, you will be asked to work in the Lab about 16 hours per week. Every effort is made to make the scheduling of these hours flexible. When scheduling your hours, keep in mind your own final exam schedule because you will be required to maintain these hours during the hectic finals week. Your duties will include administering and grading exams as well as helping students on a one-to-one basis. This teaching duty requires that you know the material in all of the courses listed above. Although the following pages are primarily directed towards responsible teaching in discussion sections, they contain ideas about teaching which are applicable to teaching in the Lab.

Preparation For A Section

To effectively prepare for a section you must of course be aware of the subject material covered in the class lectures. One way to insure this knowledge is to attend the lectures (some in-

structors require it). Another way is to meet regularly with the course instructor, which you may request if the instructor fails to do so. The instructor may want you to discuss certain topics that may have been treated quickly in the regular lecture; or perhaps he/she feels that clarification of certain ideas may be helpful. You should be able to completely work all the previously assigned exercises for the course, and give clear concise explanations of the related concepts. Minimally, this involves carefully reading those parts of the textbook related to the material, and, if necessary, writing complete solutions to the exercises (distributing dittoed copies after the students have had a chance to solve them, and after any written assignments have been passed in). In addition, you could prepare a short summary of the main ideas of the course which the students have encountered since your last meeting with them. This could be presented at the beginning of each section. Further, you could concoct extra examples to highlight and illuminate the lectures and textbook. (By the way, always bring your textbook to section.) In short, proper preparation to lead a section is an absolute necessity for effective teaching. It will give you more confidence in the classroom, earn you greater respect from your students, and need not consume much time.

First Day In Section

When you walk into the first meeting of a section, you should be as aware as possible of how the course will be conducted. This

means knowing precisely which topics will be covered in the course, the homework and grading procedures, and when the course instructor and you will be available to help students. Often the instructor will want you to distribute class cards at the first meeting. In this case, you should find out how this is to be carried out. Often there will be more students than available cards. A class card is very important to the student, for it reserves a space in the course. The best way to have all this information in hand is to make an appointment with the course instructor the week before classes begin. If the plan is to distribute a course information sheet, obtain one and familiarize yourself with it. If possible, attend the first lecture of the course so you will know the students viewpoint on how the course will be run. Above all, remember it is your responsibility to contact the course instructor and to be aware of course procedures.

Begin the first section by introducing yourself and giving the name of the course. Then write your name, office number and office hours on the board. Also remind the students of the instructor's office hours. It's a good idea to summarize briefly the procedures of the course and ask if there are any questions about it. Then, most importantly, you should discuss the reason for the section, and how you intend to conduct it. Convince the students that they will benefit by attending your section. Otherwise, attendance may drop considerably and the purpose of the section will be diminished. If time is still available, you could review the material which is

assumed for the course (if any). This might help to convince the student that your section is actually worthwhile. Finally, you should attend the first section regardless of whether or not the first lecture has taken place. If no students arrive on time (at the first section or any other), you should remain in the room for at least twenty minutes.

Student-Teacher Rapport

What should a teacher-student relationship be? We suggest that you be natural, genuine, and honest. Freely draw on your past experience in interpersonal relationships. Remember, students are people too.

Accept the facts of the situation: you have more knowledge and experience than most students, you are being paid to help them, and they are in your section or office for that reason. Also, be sympathetic to their feelings, for they may feel self-conscious or nervous while asking for help. Do all you can to put them at ease. Don't be condescending, critical, or rude. Be sure to listen thoughtfully to what a student has to say and then respond to the key idea offered. Confirm the value of a student's remark by responding to it directly.

Frequently you will have students coming to you who aren't sure of exactly what it is they don't understand. When this

occurs, we have found it best to go back to the basic definitions and concepts and to work from there. Try to be very patient. Intimate to your students that they should feel free to ask the same question several times if your explanations are not clear to them. You may need to be creative, because an explanation which works well for one student may not work for another. Above all, remember that not all students' minds work the same.

Occasionally, students in your office or section may act angry and/or rude. We have found that firm, but honest and thoughtful comments will usually keep the situation under control.

Conducting the Section

The manner in which you conduct your section should be determined by your personality and the goals of the section itself. Although these goals may vary slightly from course to course, two general observations may be made. First, sections are not to introduce new material (unless the course instructor decides otherwise). Rather, they are to give the student an opportunity to explore significant concepts a second time, under your guidance. Second, the small size of a section provides an opportunity for the student to have particular questions discussed and observations recognized. This role is particularly important in sections associated with large lectures, where you will serve as a liaison to inform the course instructor of the particular areas students are finding difficult.

The generally small class size of sections gives you the opportunity to use alternative classroom techniques to achieve the goal of active student participation in the learning process. For example, when responding to a student's question, you are not obliged to give a lecture. Utilize the resources of your class itself. Ask another student to respond to the question or ask the the student to attempt to answer it. If students find this difficult, guide them to the solution with a series of questions. If you do work through the problem yourself, do so with enthusiasm. Frequently ask your students questions, both to encourage them to think with you and to find out if they are following your argument. Another possibility is to have students work problems on the chalkboard or in small groups. In any event, feel free to explore alternative approaches to the traditional lecture method, and try to avoid mechanically responding to question after question of the form "Do number 5".

Regardless of the approaches which you choose it is important that you consistently use good teaching techniques. Therefore, immediately following are several paragraphs designed to give an indication of some good teaching techniques. *

---

* The first five of these ideas were drawn from Six Common Non-facilitating Teaching Behaviors by Sondra M. Napell, Coordinator, Graduate Assistant Teaching Programs, University of California at Berkeley, 1974.

1. Insufficient "Wait-time"

For students to learn, they must be given time to think. So when you ask them questions, which should be done frequently, be sure to allow a sufficient "wait-time" before you solicit a response. Students think at different rates, so don't just wait until a few quick students respond. Instead, as studies have shown, you should try waiting as long as ten seconds. You may find this uncomfortable at first, so silently count to ten to get through the silence.

2. Rapid Reward

After you have allowed sufficient "wait-time" and a student does respond, don't immediately say "right" or "wrong" and move on. This tends to curtail further student thinking. Allow time for your students to consider the answer and make their own conclusions. You might then ask them to explain why they agree or disagree with the original answer. Otherwise, they will depend on you to do all the thinking.

3. Programmed Answer

Remember that the point of asking your class questions is to encourage them to think. So try not to ask questions which have the answer built into them, for example: "What is the derivative of a distance function? Is it velocity?" or "There are an infinite

number of primes, aren't there?" Better questions might be: "What is the physical interpretation of the derivative of a distance function?" or "Are there an infinite number of primes? Why or why not?" Asking questions which require thoughtful answers will give you valuable insight as to the areas where your students are having difficulties.

4. Non-specific Feedback Questions

"Does everyone understand?" or "Are there any questions" are examples of questions which usually fail to solicit feedback. These kinds of questions (Which are opposite to the programmed answer type) are embarrassing for a student to answer because they call attention to their own ignorance. Unfortunately, the students who are most likely to respond are those who understand most of the material and need only to clear up a minor point. More appropriately, one should say things like, "The concept of a limit can be a difficult one to grasp. Let's try to summarize together some different ways to think of it" or "Let's think of some other examples to which this theorem applies." Also, you might ask, "What are your questions?" since this implies that you realize that they will have some.

5. The Teacher's Ego-stroking and Classroom Climate

It is important for students to feel psychologically "safe" to participate and to suggest answers to your questions - even if

they are incorrect. You should never criticize a student for offering the wrong answer, for you will inhibit the other students. Also, don't exhibit an air of superiority by using expressions like "obviously" or "It should be clear by now that..."

You should realize (since nobody is perfect) that you will occasionally make mistakes or not know a solution to a problem. Be sure to take this in stride. Admit your shortcomings and clear up the situation during the next class meeting. Your students will respect you for doing so. Naturally, the probability of your not knowing a solution or answer will be significantly reduced if you are adequately prepared.

6. Enthusiasm in the Classroom

A TA who shows enthusiasm for the subject material (and the job in general) will benefit in many ways. Enthusiasm is contagious, and therefore your students will show more interest and participate more in class. This makes the TA's job easier, for no longer will you feel burdened with carrying on the discussion alone. Also, an enthusiastic teacher creates an informal classroom atmosphere which contributes to the learning process. Remember that the instructor's enthusiasm is generally an upper bound for the enthusiasm of his/her students.

Use of Chalkboard

There are certain ways to use a chalkboard which contribute greatly to the learning of mathematics. The most important point to remember is to use the board extensively. While solving a problem or discussing a proof, include all of the steps. For instance, if you are solving a calculus problem which involves some algebraic manipulation, do not dismiss the algebra as trivial and simply omit it from your written solution. Although it may be trivial to you, it is unlikely that the students feel similarly. Also, be particularly careful not to switch variables in the middle of an argument and not to change the meaning of a variable several times.

Use the space of the chalkboard wisely. Writing too small makes it difficult for the student to decipher the material, and writing too large will cause you to erase it too quickly. Try to leave your explanations on the board as long as possible, because most students will want to copy it exactly. Use the chalkboard in an organized manner. Students become frustrated when they have to patch together bits and pieces of a solution distributed randomly about the board. Also, try to refrain from using the bottom six inches of the board. Students in the back of the room have a difficult time reading from it. Also, stand to the side of what you are writing. This way the students will be able to combine your written and verbal explanations into one cohesive unit. Besides, it will make note-taking easier for them and teaching easier for you.

Remember that generally what you write on the chalkboard is all that your students will put in their notes. When you start a problem carefully write the page, exercise number and exact statement of the problem. Then write the solution on the blackboard exactly as you would expect your students to. Your solutions will serve as their models. If you should write an incorrect statement on the blackboard, don't simply erase it or announce it is incorrect. Rather, draw a line through the incorrect statement and write the correct statement below it. Finally, as you proceed through the problem, it is often helpful to underline the important steps or ideas.

Make every effort to write legibly. There is no point in writing something that cannot be read.

Speaking Techniques

While in section, certain consciously practiced speaking techniques will help insure your students' attention and interest. You must first of all address your audience. Speaking while facing the blackboard, reading your notes, or looking out the window will only serve to distract them. They might start looking out the window themselves, wondering what it is you find so interesting. While addressing your audience, try to move around and initiate eye contact with students in various quarters of the room. These behaviors, coupled with distinct pronunciation and verbal emphasis on the im-

portant words and ideas, will relieve your students from the boring monotone delivery which we have all experienced.

You should adjust your verbal delivery to the situation at hand. With a large number of students or a room with poor acoustics, you might need to speak loudly. Otherwise, try not to blast your students with a booming voice. Also, you may need to adjust your speed of delivery to the complexity of the material and/or the learners' experience. While preparing for a section, keep this in mind and try to pick out the areas in which the students may have difficulties.

If English is not your native language, it may be necessary for you to enroll in special courses to improve your language skills in addition to your mathematics or statistics courses. In such cases it may be necessary to take a reduced course load or slightly alter your departmental responsibilities until your language skills are adequate for successful performance in the classroom. It is important to realize that the demands of a class upon your English abilities are much greater than those of ordinary person-to-person conversation and that students often will blame you for their inability to understand the mathematics or statistics. As a consequence the development of your ability to communicate in English is an important component of your professional development and will require continued effort on your part. In addition to ordinary skills you will want to develop good speaking techniques. Write important

phrases or technical words such as derivative or integral on the chalkboard the first several times you use them. That way the students will learn to associate your pronunciation of the word with the proper term. Also, never talk with your back to the students and if a student asks a question, move away from the chalkboard and toward the student. Finally, if you don't understand what a student is saying, be honest, and say "I do not understand".

Devising Tests

From time to time, you will be asked to write a quiz or other form of examination. Here are a few hints which we have found to be helpful. For each question included, you should ask yourself, "What specific ideas from the course do I want the student to demonstrate here?" To avoid writing a question which is unduly difficult to solve (at least for your students) always work out your solutions completely before making the final draft. Also, while making the exam, keep in mind that someone (usually you) will have to grade it. So don't make up questions which involve lenghty computations which stray from the heart of the subject. Finally, remember your students will normally work much more slowly than you do. As a general rule, for a 50 minute quiz you should be able to thoroughly write all of the solutions in 25 minutes or less. In some cases, such as Math 1, you should be able to do this in as few as 10 minutes.

The departmental typists do not have time to type quizzes so you will have to neatly write them yourself. They will, however, type midterms and final exams. Be considerate. If you have a midterm or final which you want typed, be sure to give it to the typing room no later than one week in advance.

Cheating

Even though students found cheating on an examination are subject to dismissal from the University, the practice is prevalent. To minimize this problem, ask your students to sit as far from one another as possible.

If you notice one student copying from another during an exam, walk over to the students and note their names (which may already be written on their exams). Don't create a fuss; but, if possible, quietly ask the alleged copier to move to another seat where cheating will not be as easily done. After the exams have been passed in, it will be possible to compare the papers of the copier and the copiee.

Writing two different exams and passing them out alternately is also a deterrent to cheating. Be sure to count the number of students taking the exam and compare that with the number of exams turned in. This will eliminate the problem of having students come to you claiming they took an exam, and you lost it. Occas-

ionally, in a large lecture section, students will have a friend take the exam for them. This can be avoided by becoming familiar with the faces of your students and by asking them to put their signature and alpha number on their examination. Exams are to be picked up in the Typing Office (which is open from 8:00 am to 5:00 pm). Finally, if you do find a student cheating, attempt to obtain corroborating evidence and inform the instructor of the course and the Vice Chairman, Horace Mochizuki.

Grading

As a TA, one of your usual responsibilities will be to help grade midterm and final exams. It is a sound practice to completely solve each problem yourself (in several different ways if possible) before you begin gading any exam. To make your grading consistant, consider grading one answer, or page, on all exams at the same time. It is often useful to presort the questions in order of apparent correctness of the response before grading to improve the consistency. If you are planning on giving "partial credit" preview the papers to see what types of answers and mistakes you will be receiving. You should decide upon a specific plan to distribute the points, and record the plan for future reference in case of student questions, prior to the grading. Discuss your grading plan in detail with the instructor before you start grading the tests. If you are uncertain as to how to grade any examination response do not hesitate to discuss the particular paper with the instructor.

Students have been known to add answers to their exams after getting them back, and then seek a higher grade. To minimize this problem, make a habit of crossing out blank space on the answer sheet or otherwise marking the end or absence of a solution.

It is against University regulations to leave graded exams outside your office door. Tell your students that they may pick up their exam during your regularly posted office hours. If you choose to post grades outside your office door, you may not list them by the students' names. A good practice is to list the grades by the students' alpha numbers. These numbers will be found on the official course enrollment sheet.

Finally, remember that final grades are due in the Registrar's Office about three days after the last day of finals week. Therefore, it is imperative that you finish your grading duties within that time period. All grade cards should be turned in to the Departmental Office so that they can turn them into the Registrar's Office. In general, prompt grading and returning of exams is appreciated by students, the instructor and the staff.

Teaching Fellow

For the academic year 1982-83, the department has appointed Teaching Associate, John Haussermann as a Teaching Fellow. His responsibilities in this position will be varied. As a peer adviser,

he will serve as the first source for resolutions of minor difficulties associated with your sections. This includes, of course, being available to simply chat with you about your teaching. He will coordinate the videotaping of new TA's during the Fall and Spring quarters, as well as the implementation of midquarter teaching evaluations during the Winter quarter. Finally, he will organize, in conjuction with the office of Instructional Consultation, departmental TA training workshops and seminars.

Instructional Development

As a TA and future instructor, you will want to be continually improving your teaching competency. The Office of Instructional Consultation (Learning Resources Bldg. Room 1130) provides important services for this. At your request, OIC will provide a videotape and critique service. They will tape one of your discussion sections and then provide various consultation options. For example, you may see your tape: (1) alone, (2) with the course supervisor, (3) with OIC's educational consultants, (4) with other TAs. This service is worthwhile and the Mathematics Department requires each new TA to be videotaped at least once during both the Fall and Spring quarters. If you decide to use this service beyond the required amount (and we encourage you to do so), then contact the scheduling person at extension 4346 or call Nancy Lorsch at extension 3341.

Although the Mathematics Department provides end-of-quarter evaluation forms for departmental use, OIC will provide midquarter and end-of-quarter feedback surveys for your personal use. They are willing to consult with you about designing a survey which will yield the types of information you are looking for. Again, you will be the only person who sees the results unless you choose to discuss them with someone either in the department or a consultant in OIC. If you are interested in designing a survey, contact Nancy Lorsch at ext. 3341.

Several times each quarter, the OIC offers teaching improvement workshops. For example, workshops on writing quizzes and questioning skills have been offered in the past.

Also, there are grant monies available (minigrants $800, summer grants up to $500) if TAs wish to improve instruction or make innovations in a course for which they TA.

This handbook may not answer all of your questions; the staff, (in particular the Graduate Affairs Assistant, Patty Minnich), faculty, and other TAs are available to help you. Do not hesitate to ask!